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EXAMINER

CANTELMO, GREGG

ART UNIT	PAPER NUMBER
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1753

24

DATE MAILED: 02/01/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

mk-24

# Office Action Summary

Application No.

09/334,974

Applicant(s)

FOSTER ET AL.

Examiner

Gregg Cantelmo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5,7-24 and 26-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5,7-24 and 26-36 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

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## DETAILED ACTION

### *Response to Amendment*

1. In response to the amendment received on January 9, 2002:
  - a. Claims 55-63 have been canceled as per Applicants request;
  - b. The 103(a) rejections presented in the previous office action stand.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4-5, 7-9, 21-24 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent No. 5,413,874 (Moysan '874) in view of European Patent Application No. 0 486 711 A1 (EP '711); all of record and for the reasons of record.

Moysan '874 is drawn to a process coating an article with a multilayer coating comprising a plated metal layer of a nickel alloy and a sputter deposited (i.e., physical vapor deposited (PVD)) refractory metal layer, preferably zirconium deposited on the nickel alloy (abstract and Example 1; as applied to instant claims 1-2, 4-5, and 21-24).

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A refractory metal compound selected from nitrides is also deposited and by example is zirconium nitride (paragraph bridging columns 7 and 8 and prior art claims 4 and 8, as applied to instant claims 7-9, 26-28).

The difference between the instant claims and Moysan '874 is that Moysan '874 fails to explicitly disclose of a step of subjecting the plated layer to pulses of air to dry and clean the article surface (instant claim 1).

EP '711 discloses of a procedure for blowing off liquid from an object by using pulsating compressed air to dispel the liquid (abstract). This reference particularly teaches that this process is advantageously used in plating processes such as electroplating (page 5 of translation) to remove and recover electrolytes and further to provide a "spot-free" dryness, i.e., that no drops or traces of drops remain on the dried objects. Upon removing the unused electrolytes, the object will also be cleaned.

The timeliness of dry cleaning would have obviously been immediately after deposition of the electroplated layer and prior to any further depositions to clean and dry the surface and recover and unplate electrolytes on the surface.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Moysan '874 by incorporating the pulsed air process of EP '711 since it would have provided a means to remove and recover excess electrolytes on the surface of the article and also to provide a "spot-free" dryness, i.e., that no drops or traces of drops remain on the dried objects.

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***Response to Arguments***

4. Applicant's arguments filed January 9, 2002 have been fully considered but they are not persuasive. In particular:

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Moysan '874 deposits a multilayer film which includes depositing electroplated layers. EP '711 teaches that it is desired to pulse dry electroplated layers to dry the film and recover unused electrolyte. Thus it would have been obvious to one of ordinary skill in the art of electroplating to use the pulse drying technique to dry the electroplated film and recover unused electrolyte.

Moysan '874 discloses first depositing a electroplated film prior to depositing a PVD film. EP '711 teaches that it is desired to pulse dry electroplated films to dry the film and recover electrolytes.

One of ordinary skill in the art would have found it obvious to employ this pulse drying step in the teachings of Moysan '874 to dry the electroplated surface and recover unused electrolytes. This step would have obviously been applied prior to a PVD coating to effectively

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achieve the advantages taught by EP '711, that is to dry the film and recover any undeposited electrolyte.

***Claim Rejections - 35 USC § 103***

5. Claims 29-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moysan '874 in view of EP '711 as applied to claims 1-2, 4-5, 7-9, 21-24 and 26-28 above, and further in view of U.S. patent No. 5,626,972 (Moysan '972); all of record and for the reasons of record.

The teachings of Moysan '874 and EP '711 have already been discussed above and are incorporated herein. It is considered that claim 31 is identical in content to claim 4 (applied to claim 31). Likewise claims claim 32 and claim 5 are held to be identical in content (applied to claim 32).

The differences not yet discussed are of: depositing a chrome film over a nickel film (instant claim 29) and depositing the refractory metal film on top of the chrome film (instant claim 30).

Moysan '972 discloses of plating both nickel and thereafter chromium (i.e., chrome) on an article prior to depositing the refractory metal constituents (see col. 1, lines 49-65 and lines 19-36). Deposition of the chromium and refractory metal layers imparts a desired brass color to the multilayer structure and improves the wear and abrasions resistance of the product.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Moysan '874 by depositing chromium

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over the nickel layer and thereafter depositing the refractory metal comprising material as taught by Moysan '972 since it is well known in the art in the formation of brass articles to first electrolytically deposit nickel, then chrome on top of the nickel plating prior to refractory metal deposition to provide an article of highly polished brass with wear and corrosion resistance protection.

#### ***Response to Arguments***

6. Applicant's arguments filed January 9, 2002 have been fully considered but they are not persuasive. In particular:

Applicant provides no arguments to this combination of prior art apart from those drawn to the primary 103 rejection of Moysan '874 in view of EP '711, discussed above and incorporated herein.

#### ***Claim Rejections - 35 USC § 103***

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moysan '874 in view of EP '711 as applied to claims 1-2, 4-5, 7-9, 21-24 and 26-28 above, and further in view of U.S. patent No. 5,558,759 (Pudem) all of record and for the reasons of record.

The differences not yet discussed are of: plating a copper film on a portion of an article's surface and subsequently plating a nickel layer on said copper layer and a chrome layer on said nickel layer (instant claim 10).

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Pudem teaches of metal finishing processes wherein a first copper plating step is performed and thereafter, to form a brass finish, nickel and then chrome are plated (col. 10, lines 1-19). The advantages of a first copper plating is that it provides a uniform surface upon which additional layers can be plated (col. 2, ll. 1-5). Thus in depositing a brass finish, Pudem first teaches depositing copper (to provide a uniform surface upon which additional layers can be plated) and thereafter forming a nickel layer and chrome layer sequentially.

The motivation for using copper is to provide a uniform surface upon which additional layers are plated. The motivation for further depositing nickel and chrome is to impart a brass finish to the substrate.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Moysan '874 by plating the multilayer structure first with a copper plating layer as suggested in the teachings of Pudem since copper plating provides an adherent coating surface on a substrate to enhance the adherence of subsequently plated materials with the substrate. The combined structure would have improved the decorative and protective characteristics of the article of Moysan '874.

8. Claims 11-13, 18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moysan '874 in view of EP '711 and Pudem as applied to claims 1-2, 4-5, 7-10, 21-24 and 26-28 above, and in further view of Moysan '972.

Moysan '874 discloses of the refractory metal being zirconium (instant claims 12 and 13); and of a zirconium nitride film deposited on the zirconium film (instant claims 18 and 20).



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The difference not yet discussed is depositing the refractory metals atop the chromium layer (claim 11).

Moysan '972 discloses that it is known in the art of forming decorative and protective multilayer coatings simulating brass to plate nickel and chromium, discussed above and incorporated herein. Moysan '972 and Moysan '874 drawn to similar inventions (forming articles having decorative and protective coatings). Pudem obviates using an initial copper layer to provide a smooth surface for additional layers to be deposited thereon, such as nickel and chrome layers to impart a brass color (discussed above, incorporated herein). Moysan '874 teaches of depositing the refractory layers atop the nickel layer absent a chromium layer (discussed above, incorporated herein).

Use of chromium layers in the formation of brass simulated coatings is well-known as taught by Pudem, above, and Moysan '972 (col. 4, ll. 5-32). Moysan '972 further teaches that the refractory metal and refractory metal alloy layers, the same composition layers as used in Moysan '874 should be deposited atop the chromium layer to provide wear and abrasion resistance and the desired color appearance such as brass (col. 5, ll. 27-29).

The motivation for arranging the multilayer structure taught by Moysan '874 and Pudem is to provide a multilayer coating that simulates brass. The external layers would be refractory metal or refractory metal alloy layers as taught by Moysan '874 and deposited atop the chromium layer as taught by Moysan '972 to optimize the multilayer brass simulating coating wherein the

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refractory layers provide wear and abrasion resistance and the desired brass color appearance to the film.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Moysan '874 in view of Pudem by depositing the refractory metal or refractory metal alloy film atop the chromium layer as taught by Moysan '972 since it would have provided wear and abrasion resistance and the desired brass color to the multilayer arrangement.

#### ***Response to Arguments***

9. Applicant's arguments filed January 9, 2002 have been fully considered but they are not persuasive. In particular:

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). Applicant provides no additional weight to this argument with respect to the claimed invention.

To clarify issues, the Examiner has restructured and rewritten the rejections as now set forth in items 7 and 8 above.

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Note that Pudem is provided to show the copper, nickel and chromium multilayer structure and that Moysan '972 teaches depositing the refractory metal or refractory metal alloy layers, the same materials as the upper layers of Moysan' 874 atop the chromium layer.

***Claim Rejections - 35 USC § 103***

10. Claims 14-17, 19, and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moysan '874 in view of EP '711, Pudem and Moysan '972, as applied to claims a 1-2, 4-5, 7-13, 18, 20-24 and 26-28 above, and further in view of U.S. patent No. 5,922,478 (Welty); all of record and for the reasons of record.

The teachings of Moysan '874, EP '711, Pudem and Moysan '972 have already been discussed above, incorporated herein.

The difference not yet discussed is of depositing the claimed sandwich coating (instant claims 14 and 33) nor of depositing the particular films thereafter (instant claims 15-17, 19, and 32-36).

Welty discloses of coating an article with a nickel layer, chrome layer, a refractory metal layer (preferably zirconium), a sandwich layer comprised of a plurality of alternating layers of a refractory metal compound 28 and a refractory metal alloy layer 30 (see abstract and col. 4, ll. 54-67 as applied to claims 14 and 33). Use of the sandwich array affects the color properties of the multilayer decorative coating as well as provides wear and abrasion resistance to the structure.

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Thereafter zirconium nitride film 32 and layer 34 of reaction products of a refractory metal or refractory metal alloy, oxygen and nitrogen or of a refractory metal oxide or refractory metal alloy oxide (col. 7, lines 8-13 as applied to claims 15-17, 19 and 34-36).

The motivation for depositing a sandwich array and the refractory alloys atop the array is to impart a desired coloration to the multilayer decorative coating as well as provide wear and abrasion resistance to the structure.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the teachings of Moysan '874 with the alternating sandwich layers and the refractory alloys atop the sandwich structure as taught by Welty since it would have provided wear resistance, corrosion protection, and acid resistance to the coated article.

### ***Response to Arguments***

11. Applicant's arguments filed January 9, 2002 have been fully considered but they are not persuasive. In particular:

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991). Applicant provides no additional weight to this argument with respect to the claimed invention.


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In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). Reasons for combining have been set forth in the rejection above.

***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregg Cantelmo whose telephone number is (703) 305-0635. The examiner can normally be reached on Monday through Thursday from 8:30 a.m. to 5:30 p.m. Other forms of communication can be contacted through the appropriate contacts indicated in the conclusion of the previous office action, incorporated herein.

gc

  
NAM NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

January 30, 2002